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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/627,544	07/25/2003	Peter W.J. Jones	58096 (71106)	3558
21874	7590	11/15/2006	EXAMINER	
EDWARDS & ANGELL, LLP P.O. BOX 55874 BOSTON, MA 02205			KUHN, JORDAN M	
			ART UNIT	PAPER NUMBER
			2624	

DATE MAILED: 11/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	10/627,544		JONES ET AL.	
	Examiner		Art Unit	
	Jordan Kuhn		2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Kermode (US Patent No 3,841,734).

Regarding **claim 1**, Kermode discloses a system and method for contrast enhancement comprising viewing a scene with a viewing device (eyes, video camera, or other device), adjusting two circular variable interference filters (CVF) such that each CVF permits a specific wavelength of light in the range of 400nm to 1200nm to pass to the viewing device, as disclosed at column 2 line 60 – column 3 line 16, which reads on “viewing an area with a viewing device, while selectively and varyingly changing a sensitivity of the viewing device to certain wavelengths of light (electromagnetic radiation) lying in any one of the ultraviolet (UV) range, the visible range, the near infrared range or the far infrared range”, and combining the light transmitted through the two filters and detected by the viewing device, wherein the two filters are adjusted to wavelengths that alter the appearance of a target object relative to the background of the scene, in order to detect the object, as disclosed at column 3 line 19 – column 4 line 60, which reads on “determining the presence of an object when a visual difference between the

Art Unit: 2624

object and background is discerned when the sensitivity of the viewing device is changed to a certain mixture of wavelengths of light”.

Regarding **claim 2**, Kermode discloses everything as applied above (see claim 1).

Kermode further discloses where there is no discernable difference between the target object and the background of the scene if the two filters are adjusted to pass different wavelengths, as disclosed at column 8 lines 1-7, which reads on “wherein said determining includes determining the presence of an object when a visual difference is observed between the object and the background and when no discernable visual difference is observed when the sensitivity of the viewing device is changed to at least another mixture of wavelengths of light”.

Regarding **claim 3**, Kermode discloses everything as applied above (see claim 1). As discussed above, Kermode discloses viewing a scene with a viewing device (eyes, video camera, or other device), adjusting two circular variable interference filters (CVF) such that each CVF permits a specific wavelength of light in the range of 400nm to 1200nm to pass to the viewing device and combining the light transmitted through the two filters and detected by the viewing device, wherein the two filters are adjusted to wavelengths that alter the appearance of a target object relative to the background of the scene, in order to detect the object, which reads on “wherein said viewing an area includes viewing the area with the viewing device in the visual light spectrum and while selectively varyingly changing the sensitivity of the viewing device to certain wavelengths of light lying in one of the UV range, the near IR range or the far IR range; and determining the presence of an object when a visual difference between the object and background is discerned when the sensitivity of the viewing device is changed to a certain

Art Unit: 2624

mixture of wavelengths of light in the visual range and the one of the UV range, the near IR range or the far IR range”.

Regarding **claim 4**, Kermode discloses everything as applied above (see claim 3). As discussed above, Kermode discloses adjusting the two filters in order to detect a target object and further discloses where there is no discernable difference between the target object and the background of the scene if the two filters are adjusted to pass different wavelengths, wherein if there is no discernable difference between a target object and the background, the filters are adjusted in order to detect the object, which reads on “wherein said determining includes determining the presence of an object when a visual difference is observed between the object and the background and when no discernable visual difference is observed when the sensitivity of the viewing device is changed to at least another mixture of wavelengths of light”.

Regarding **claim 11**, it is interpreted and thus rejected for the same reasons as applied above in the rejection of claim 1.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 5-10, and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kermode in view of Miller (US Patent No 5,940,183).

Art Unit: 2624

Regarding **claim 5**, Kermode discloses everything as applied above (see claim 3).

However, Kermode fails to specifically disclose wherein the filters comprise a plurality of bandpasses wherein each bandpass has a predetermined bandwidth. However, the examiner maintains that it was well known in the art to provide for wherein a filter comprises a plurality of bandpasses wherein each bandpass has a predetermined bandwidth, as taught by Miller.

In the same field of endeavor, Miller discloses a filter wheel comprising a plurality of filter segments wherein each segment has a bandpass with a unique center wavelength, wherein each segment also has a predetermined bandwidth, as disclosed at column 3 lines 8 – column 4 line 36, which reads on “dividing at least a portion of the one of the UV range, the near IR range or the far IR range into one or more viewing bandpasses, each bandpass having a predetermined bandwidth”.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify Kermode, by providing for wherein a filter comprises a plurality of bandpasses wherein each bandpass has a predetermined bandwidth, as taught by Miller, for the purpose of capturing a range of wavelengths, by using bandpasses, instead of single wavelengths, thereby improving the target object detection.

Regarding **claim 6**, it is interpreted and thus rejected for the same reasons as applied above in the rejection of claims 2 and 5.

Regarding **claim 7**, Kermode and Miller disclose everything as applied above (see claims 5 and 6). As discussed above, Miller discloses a filter wheel comprising a plurality of filter segments wherein each segment has a bandpass with a unique center wavelength, which reads on

Art Unit: 2624

“wherein said dividing includes dividing at least a portion of the one of the UV range, the near IR range or the far IR range into a plurality or more viewing bandpasses”.

Regarding **claim 8**, it is interpreted and thus rejected for the same reasons as applied above in the rejection of claims 5 and 7.

Regarding **claim 9**, Kermode and Miller disclose everything as applied above (see claims 5 and 6). Miller further discloses where the bandpasses must remain narrow and have a unique center wavelength, wherein this would minimize contributions from other spectral ranges. In addition Kermode discloses where the bandpass is as narrow as a single wavelength, wherein this minimizes contributions from other spectral images, but is still wide enough to pass enough light to the viewing device to cause differences in the display, which reads on “wherein said dividing includes setting the bandwidth so each viewing bandpass has a width that is narrow enough so as to minimize contributions from other areas of the spectral region that would tend to mask the visual difference between the object and the background and wide enough to pass enough light/energy so as to make a difference in a display of a viewing device”.

Regarding **claim 10**, Kermode and Miller disclose everything as applied above (see claims 5 and 6). Miller further discloses where the bandwidths of the bandpasses for the plurality of filter segments are set such that the bandpasses partially overlap, as disclosed at column 4 lines 7-18, which reads on “wherein said dividing includes arranging the viewing bandpasses and setting the bandwidth of adjacent viewing bandpasses of the one or more viewing bandpasses such that the adjacent viewing bandpasses partially overlap”.

Regarding **claim 12**, Kermode discloses everything as applied above (see claim 11). Kermode discloses as discussed above, viewing a scene with a viewing device (eyes, video

Art Unit: 2624

camera, or other device), and adjusting two circular variable interference filters (CVF) such that each CVF permits a specific wavelength of light in the range of 400nm to 1200nm to pass to the viewing device, which reads on “a plurality of filters, the filters being configured and arranged so each view a different bandwidth of the one of the ultraviolet (UV) range, the visible range, the near infrared or the far infrared; and a mechanism for selectively positioned each filter at a light input end of the electro-optical viewing device”.

Regarding **claim 13**, Kermode discloses everything as applied above (see claim 11). As applied above, it would be obvious to modify Kermode by Miller, wherein Kermode and Miller disclose a plurality of filter segments, each configured to view a different bandwidth, wherein the filter segments are rotated in front of the viewing device, which reads on “wherein the mechanism includes: a filter comprised of a plurality of filter segments, the filter segments being configured and arranged so each view a different bandwidth of the one of the ultraviolet (UV) range, the visible range, the near infrared or the far infrared; and a mechanism for one of selectively rotating, shifting or tilting the filter so as to successively position each filter segment at a light input end of the electro-optical viewing device”.

Regarding **claim 14**, Kermode and Miller disclose everything as applied above (see claims 11-13). Kermode discloses as discussed above, wherein the viewing device is a video camera, and further discloses wherein output from the video camera is fed to a television monitor, as disclosed at column 4 lines 37-44, which reads on “wherein the electro-optical viewing device is one of a monochromatic image viewing device or a color image viewing device”, wherein it is inherent that the video camera and television monitor are either color or monochromatic (black and white).

Art Unit: 2624

5. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kermode in view of Miller further in view of Korniski et al. (US Patent No 6,646,799), hereinafter referenced as Korniski.

Regarding **claim 15**, Kermode and Miller disclose everything as applied above (see claims 11-13). However, they fail to specifically disclose where the amount of light in each of the viewing bandpasses is successively and separately added into the image forming sensitivity of the color image viewing device. However, the examiner maintains that it was well known in the art to provide for successively and separately adding multiple viewing bandpasses into the image forming sensitivity of a color image viewing device, as taught by Korniski.

In the same field of endeavor, Korniski discloses a system for combining multiple energy bands to improve scene viewing comprising a system for combining multiple energy bands to improve scene viewing comprising successively and separately adding multiple viewing bandpasses into the image forming sensitivity of a color image viewing device, as disclosed at column5 lines 4-45, which reads on “wherein the electro-optical viewing device is a color image viewing device and the an amount of light in each of the viewing bandpasses is successively and separately added into the image forming sensitivity of the color image viewing device”.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to modify Kermode and Miller, by providing for where the amount of light in each of the viewing bandpasses is successively and separately added into the image forming sensitivity of the color image viewing device, as taught by Korniski, for the purpose of allowing

Art Unit: 2624

the user to view the scene under any combination of filters at a given point in time, i.e. only IR, only visible, or combination (column 5 lines 32-45).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kermode (US Patent No 3,602,573) discloses a color analysis optical surveillance system, comprising a set of filters to provide color contrast enhancement. Osthues et al. (US Patent No 5,132,802) disclose a high contrast image apparatus employing optical filters to cause each image pick-up element to have its maximum sensitivity in a different spectral range. Jones (US Pub No 2002/0067560) discloses a method for creating color images from monochromatic night vision. Adams et al. (US Patent No 3,737,239) disclose a system comprising a plurality of overlapping bandpass filters. Withagen et al. ("Band selection from a hyperspectral data-cube for a real-time multispectral 3CCD camera") disclose a system comprising multiple bandpass filters positioned in front of CCDs in order to increase object detection performance. Witherspoon et al. ("The Coastal Battlefield Reconnaissance and Analysis (COBRA) Program for Minefield Detection") disclose a rotatable filter wheel used for object detection.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jordan Kuhn whose telephone number is 571-272-4295. The examiner can normally be reached on M-F 8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on 571-272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2624

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jordan Kuhn
Examiner
Art Unit 2624


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